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ABSTRACT

First Steps is a program instituted by the Western Australia Ministry of Education to improve the literacy and numeracy of primary school students, particularly those at risk of academic failure. First Steps is organized around reading, writing, spelling, and oral language; children's skills are organized along developmental continua. This study, conducted by Murdoch University, was an attempt to find out if the effects of teachers using First Steps strategies could be measured in terms of student achievement. Participating schools (n=22) tested their Year 3 and Year 7 students with the Monitoring Standards in Education (MSE) reading and writing tests, and their teachers completed a questionnaire regarding their training in and use of First Steps strategies. In all, 889 Year-3 and 902 Year-7 students were tested. The analysis adjusted and removed effects of students' socioeconomic status, ethnic background, first language other than English, and recent arrival in Australia. After removing effects of these factors, there was a positive relationship between the degree of implementation of First Steps and student results on literacy tests, a finding that supports the position that First Steps was assisting students to master literacy skills more successfully than traditional methods. The effects of First Step were much stronger for Year 3, and, in fact, the understanding and use of First Steps were much higher in Year 3. An appendix contains the teacher survey instrument, the student background information sheet, and the data analysis report from Murdoch University. (SLD)

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ED 436 546

STUDENT ACHIEVEMENT:

A STUDY OF THE EFFECTS OF FIRST STEPS TEACHING ON STUDENT ACHIEVEMENT

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Editor's Note

This document is one of a series of reports that document the formative research that supported the creation and development of *First Steps*™. As a result of this research, the Education Department of Western Australia (EDWA), in collaboration with the Australian Council for Educational Research (ACER) revised *First Steps* in response to each of the issues and questions raised by this research. *First Steps* training courses, Developmental Continua, and Resource Books are published with due amendments and alterations.

Other research documents that support the development of *First Steps* include:

Dr. Phil Deschamp:

- A Survey of the Implementation of the Literacy Component of the *First Steps* Project in WA
- The Implementation of The Literacy Component of The *First Steps* Project in ELAN Schools
- A Survey of the Effectiveness of the Focus Teacher 'B' Training for the *First Steps* Project
- Student Achievement: A Study of the Effects of *First Steps* Teaching on Student Achievement
- Case Studies of The Implementation of the *First Steps* Project in Twelve Schools
- The Development and Implementation of the *First Steps* Project in Western Australia

ACER:

- Empirical Validation of the *First Steps* Reading Continuum
- Empirical Validation of the *First Steps* Spelling and Writing Continua
- Empirical Re-Validation of the *First Steps* Spelling Continuum
- Assessment and Record of the Changes made to the Spelling Continuum
- The Impact of *First Steps* on Schools and Teachers
- The Impact of *First Steps* on the Reading and Writing Ability of Year 5 Students
- Background: *First Steps* and the ACER Evaluation & Report on the Validity of the *First Steps* Writing and Spelling Continua*

EDWA:

- Supporting Linguistic and Cultural Diversity Through *First Steps:* The Highgate Project

For more information about on-going *First Steps* research, please contact:

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EXECUTIVE SUMMARY

The aim of this study was to find out if the effects of teachers using First Steps strategies upon student achievement could be measured.

The question that the project addressed was:

> *After allowing for such factors as the socio-economic status of the school district, the language students speak at home, and the length of time students have been taught with First Steps strategies, is there any relationship between student achievement and the degree to which their teachers have been using First Steps strategies?*

Participating schools tested their Year 3 and Year 7 students with the Monitoring Standards in Education (MSE) Reading and Writing tests, and their teachers completed a questionnaire regarding their training in and use of First Steps strategies.

The data analysis identified and adjusted the students' results to remove the effects of:

- socio-economic status,
- Aboriginality,
- languages other than English being spoken at home, and
- students who have recently arrived in Australia,

and then explored the relationship between the students' combined scores on the Reading and Writing tests and their teachers' reported use of First Steps strategies.

The results of this analysis as expressed in the Murdoch University report was:

1. *Overall, the effect of First-Steps programme is positive;*
2. *The effect of First-Steps programme on Year 3 is different from that on Year 7;*
3. *In Year 3 data, the effect of First-Steps programme is significant, the third significant factor after SES and Gender; In Year 7 data, however, the effect of First-Steps programme is not significant at the 0.15 significance level so that it is not included in the final model of the stepwise regression.*
4. *The significant factors on the achievements of Year 3 data and Year 7 data are different. Though SES is a very significant factor on both, other significant factors on Year 3 data are Gender and Aboriginality while those on Year 7 data are Home Language and Number of Years in Australia.*

The overall positive result

The first finding was that after statistically counterbalancing students' results to remove the effects of gender, race, language spoken at home and years in Australia, there was a positive relationship between the degree of implementation of First Steps and student results on literacy tests. This overall finding supports the position that First Steps was assisting students to master literacy skills more successfully than traditional methods

The Year 3 result

At the Year 3 level, the statistical analysis identified a positive relationship between the degree of use teachers made of First Steps and student achievement. The relationship was significant above the 0.15 level of confidence and therefore was unlikely to be the results of chance. This result supports the position that the increased use by teachers of First Steps results in greater mastery of literacy skills by students.

The Year 7 result

At the Year 7 level, the statistical analysis identified a positive relationship between the degree of use teachers made of First Steps and student achievement, however the relationship was not significant and may be the results of chance. While this result supports the position that the increased use by teachers of First Steps results in greater mastery of literacy skills by students, it does not do this with any great strength.

In the light of the findings from the Case Studies of First Steps, the different results in Year 3 and Year 7 are not surprising. The level of understanding and use of First Steps strategies at the Year 3 level was far higher than at Year 7.

In the earlier survey and case study projects teachers expressed their perception that First Steps strategies were benefiting their students and assisting them to achieve better results. The findings from this project support those teachers' perceptions.

For many reasons it was possible that the effects of First Steps would not be detectable through research of this nature. For example:

- It takes time for any change in teaching to have an impact on student achievement.
- Many other factors can influence how students perform, and some of these are outside the influence of the school.
- Research in education does not always have the techniques to isolate the impact of one group of influences in the complexity of influences affecting student achievement.
- Teachers implement First Steps at different rates and in different ways.
- Some teachers who have not been trained with First Steps strategies use similar effective strategies.

These factors make the results of this study all the more important. They suggest that notwithstanding all the possibilities, First Steps seems to have resulted in improvements to student achievement in literacy in this short space of time.

CONTENTS

Executive Summary

Contents

List of Tables

Preface

The First Steps Project

1.0 BACKGROUND TO THE SURVEY.....3

2.0 THE RESEARCH QUESTIONS.....3

3.0 METHODOLOGY ADOPTED.....4

4.0 RESULTS.....7

PART A - Background information.....7

PART B - Student Achievement.....8

5.0 CONCLUSION.....10

Appendix

1 The Teacher Survey instrument
2 The Student Background Information Sheet
3 Data analysis report from Murdoch University

LIST OF TABLES

Table 1 Location of schools in the project 6

Table 2 Size of the schools in the project 6

Table 3 Years of-experience of the teachers in the project 6

Table 4 When schools commenced with First Steps 6

Preface: The First Steps project

The First Steps project emerged in 1988 in response to a growing perception in schools and the Central Office of the Education Department that many children who were experiencing difficulties in learning Literacy were not having their needs adequately met. Increasing awareness of the difficulties experienced by these children, coupled with their increasing numbers in their local schools due to increasing acceptance of the policy of *mainstreaming* children with learning difficulties had caused a ground swell demand for professional development for teachers on better ways of assisting these children.

Earlier responses to this perceived area of need had included major professional development initiatives on the wholistic nature of learning and language such as the Early Literacy Inservice Course (ELIC). Although improvements had been achieved, it was widely believed that the implementation of previous initiatives had been too dependent upon individual teacher initiatives which often had not received sufficient overt support and encouragement at the whole school level. Experience from involvement with ELIC suggested that the problem should be addressed more comprehensively as a whole school issue back at the educational bedrock of teaching principles and teaching methods.

In direct response to requests from schools Education Department officers devised a proposal for a radical refocus on the teaching of language. This proposal was forwarded to Government for support and the extra funding needed to enable the implementation process to be designed on a scale which might ensure that the proposed approach was embedded in a whole school approach to the teaching of language. To capture the notion that this was an early literacy intervention proposal it was titled *First Steps*.

The proposal had as its goal:

> *To ensure that all K-5 children, especially those at risk, make measurable progress in the areas of mathematics and early literacy learning, and are able to sustain that progress in their later primary years.*

The project that evolved spread rapidly across schools in Western Australia. In 1994 three research projects were commissioned to document the origins of the project and the extent to which schools had adopted its materials and recommended procedures.

- The first project was to develop a history of First Steps from 1988 to 1994.
- The second was to survey 150 schools around the State to ask principals, teachers and parents about the extent to which First Steps was operating in the school, and what they considered had happened as a result.
- The third project consisted of case studies of twelve schools situated in widely differing parts of the State, and having experienced differing modes of support in the adoption of First Steps methods.

Subsequently three further projects were initiated:

1. In view of the special focus that First Steps developed with regard to Aboriginal students, the data from the survey and case studies were re-analysed from the perspective of ELAN schools and a separate report was prepared.

2. In view of the fact that from 1995 further training in First Steps practices would be conducted at a school level through Focus 'B' Teachers, and more than 600 teachers, deputy principals, principals and other educators had been trained for that role, it was decided to gather their views about the training and their ideas about how it could be improved.

3. As some schools in various parts of the State had been working with First Steps for several years, a study was set up to find out whether any connection could be detected between the use of First Steps strategies and student achievement.

This is the report of the attempt to determine if First Steps could be seen to be influencing student achievement.

1.0 Background to the survey

The First Steps project had been the focus of a number of separate but related evaluation projects since it began in Western Australia in 1988. The results of some of these evaluations have been described in the history report mentioned in the Preface.

The purpose of the present report was to describe the results of a project which endeavoured to find out whether any connection could be detected between school's use of First Steps strategies and student achievement.

2.0 The research question

The question that the project addressed was:

> *After allowing for such factors as the socio-economic status of the school district, the language students speak at home, and the length of time students have been taught with First Steps strategies, is there any relationship between student achievement and the degree to which their teachers have been using First Steps strategies?*

3.0 Methodology adopted

The project team selected a random sample of schools stratified by location, school size and number of years since the school commenced with First Steps. This resulted in invitations to join in the project being extended to schools spread all over the State, and ranging from small aboriginal schools to large metropolitan schools.

Participating schools agreed to test their Year 3 and Year 7 students with the Monitoring Standards in Education (MSE) Reading and Writing tests, and for their teachers to complete a questionnaire (see Appendix 1) regarding their training in and use of First Steps strategies.

The reading test is a modified close procedure test developed by the Education Department of Western Australia. It addresses aspects of reading such as whether the students can:

- *constructs meaning from texts with familiar content,*
- *makes connections between own knowledge...and the information in texts,*
- *use basic strategies for interpreting written and visual text, and*
- *maintain continuity in understanding when meaning is disrupted.*

The writing test requires students to generate a piece of writing after structured teacher preparation and, after student editing, is assessed according to a marking key which addresses key aspects of writing such as presentation, grammar, spelling, and style. The writing test addresses student outcomes such as:

- *writes brief imaginative and factual texts which include some related ideas about familiar topics,*
- *uses basic linguistic structures and features of writtenlanguage so that writing can be readily interpreted by others, and*
- *uses writing to develop familiar ideas, events and information.*

The Teacher Questionnaire gathered information regarding:

1. Location of the school.
2. Size of the school.
3. Type of school.
4. Length of teaching experience
5. Length of time at the school
6. The year in which the school began with First Steps.
7. Special features (PSP, ELAN, PCAP, or Remote Area)
8. The Year levels presently taught
9. The parts of the school which are working with First Steps
10. Aspects of the First Steps professional development received
11. How long the students had been working with First Steps
12. Whether the use made of First Steps was continuous or interrupted
13. The impact has First Steps had on their teaching?
14. The extent to which the First Steps components had been implemented
15. The impact of the First Steps literacy programme on student attitude to and confidence in language
16. The use made of particular First Steps strategies
17. The extent to which teachers considered they used First Steps strategies in Writing, Spelling and Reading

Items 1 to 9 were used to check that the sample of schools selected contained an appropriate range of schools and teacher experience, but also included schools which had extensive involvement with First Steps, through to schools with no involvement.

Items 10 to 17 were used to assemble an index of *First Stepness* to use in the statistical analysis.

Students were also asked to complete a *Background Information Sheet* (see Appendix 2) which asked:

- their gender,
- the language spoken mostly in their home,
- the number of years the student had been in Australia, and
- if they were an Aboriginal or a Torris Strait Islander.

The unmarked student test papers, the Background Information Sheets, and the teacher questionnaires were sent to the author to arrange for marking, data entry and documenting in this report. The test results in both Reading and Writing were converted to standard scores so that the scores could be combined into a total achievement score for each child.

To provide further externality and therefore authentication to the results, the data analysis was undertaken at Murdoch University under the supervision of the Professor of Education (Prof D Andrich). The transcript of the analysis is shown in Appendix 3.

In essence, the data analysis:

1. calculated the relationship between student achievement as shown by their combined results in Writing and Reading and factors such as socio economic status, race, gender, language spoken at home, and number of years in Australia,
2. adjusted students' results to counterbalance for the effects of the above factors as calculated in Step 1,
3. on the basis of the teacher questionnaires outlined above, calculated the degree to which each child had received a First Steps approach to the teaching of literacy, and
4. calculated the relationship between the adjusted student achievement results and the degree of use made of First Steps strategies.

A positive relationship between student results and the degree of implementation of First Steps would support the position that First Steps was assisting students to master literacy skills more successfully than traditional methods.

A negative relationship between student results and the degree of implementation of First Steps would support the position that First Steps was not assisting students to master literacy skills as successfully as traditional methods.

A finding of no significant difference between student results and the degree of implementation of First Steps would support either the position that:

- First Steps was assisting students to master literacy skills as successfully as traditional methods, or
- the attempts to determine the relationship between teaching methods and student achievement in this situation had not been sufficiently precise to measure any differences that had occurred.

4.0 Results

A total of 22 schools participated in the project. After students with incomplete information were removed from the data there were a total of 889 Year 3 and 902 Year 7 students in separate data sets.

4.1 PART A - Background information

Table 1 and 2 show that the project included schools of different sizes and locations.

Table 1 Location (percentages of students)

Size of School	Total
Metropolitan	71.6
Country	28.4

Table 2 School Size (percentages of students)

Size of School	Total
100 or less students	2.7
101 - 300 students	27.1
301 - 700 students	53.5
701 or more students	16.7

Tables 3 and 4 show that the students had teachers with varying lengths of experience, and that they had commenced with First Steps at different times.

Table 3 Teaching Experience (percentages of students)

Size of School	Total
1-3 years	9.9
4-6 years	12.3
7-10 years	33.1
More than 10 years	44.7

Table 4 Commencement with First Steps (percentages of students)

Size of School	Total
1989-1990	18.4
1991-1992	58.5
1993-1994	23.1

4.2 PART B - First Steps and Student Achievement

Appendix 3 contains the report from Murdoch University of the statistical analysis of the Year 3 and Year 7 data sets.

As stated above, the analysis calculates the effects of:

- gender
- socio-economic status,
- Aboriginality,
- languages other than English being spoken at home, and
- students who have recently arrived in Australia,

on student achievement, adjusts the results to counterbalance for the effects of these factors, and then explores the relationship between the students' combined scores on the Reading and Writing tests and their teachers' reported use of First Steps strategies.

The results of this analysis as expressed in the Murdoch report were:

1. *Overall, the effect of First-Steps programme is positive;*
2. *The effect of First-Steps programme on Year 3 is different from that on Year 7;*
3. *In Year 3 data, the effect of First-Steps programme is significant, the third significant factor after SES and Gender; In Year 7 data, however, the effect of First-Steps programme is not significant at the 0.15 significance level so that it is not included in the final model of the stepwise regression.*
4. *The significant factors on the achievements of Year 3 data and Year 7 data are different. Though SES is a very significant factor on both, other significant factors on Year 3 data are Gender and Aboriginality while those on Year 7 data are Home Language and Number of Years in Australia.*

The overall positive result

The first finding was that after statistically counterbalancing students' results to remove the effects of gender, race, language spoken at home and years in Australia, there was a positive relationship between the degree of implementation of First Steps and student results on literacy tests. This overall finding supports the position that First Steps was assisting students to master literacy skills more successfully than traditional methods

The Year 3 result

At the Year 3 level, the statistical analysis identified a positive relationship between the degree of use teachers made of First Steps and student achievement. The relationship was significant above the 0.15 level of confidence and therefore was unlikely to be the results of chance. This result supports the position that the increased use by teachers of First Steps results in greater mastery of literacy skills by students.

The Year 7 result

At the Year 7 level, the statistical analysis identified a positive relationship between the degree of use teachers made of First Steps and student achievement, however the relationship was not significant and may be the results of chance. While this result supports the position that the increased use by teachers of First Steps results in greater mastery of literacy skills by students, it does not do this with any great strength.

This result could have occurred for many reasons including:

1. teachers at the Year 7 level were not using First Steps strategies to the same extent as Year 3 teachers,
2. the First Steps strategies were less effective at the Year 7 level,
3. the Year 7 students had not been using First Steps strategies for as long as the Year 3 students,
4. while First Steps assisted students to the Year 3 level, students using conventional methods had almost *caught up* by Year 7, or
5. while the tests used at the Year 3 level addressed skills which were developed better by First Steps strategies than conventional teaching methods, this was not the case to the same extent at the Year 7 level.

The data do not provide a basis for deciding which if any of the above reasons caused these results. However as First Steps was commenced at the K-3 level in many schools, the Year 3 students may have had longer exposure to First Steps than the Year 7 students.

The case studies research on the implementation of First Steps mentioned at the beginning of this report suggested that the level of understanding and use of First Steps strategies by teachers at the Year K-3 levels was far higher than at Year 4-7.

The results obtained may be reflecting the differing degree to which First Steps had been implemented at the Year 3 and Year 7 levels. Had First Steps been implemented more fully or for as long, the positive relationship at the Year 7 level may have been similar to the Year 3 results.

But this is conjecture! We have the results as they are, and they show a significant positive relationship between teacher reported use of First Steps and student achievement on reading and writing tests at the Year 3 level, and a similarly positive but not significant relationship at the Year 7 level.

5.0 CONCLUSION

In the earlier survey and case study projects teachers expressed their perception that First Steps strategies were benefiting their students and assisting them to achieve better results. The findings from this project support those teachers' perceptions.

For many reasons it was possible that the effects of First Steps would not be detectable through research of this nature. For example:

- It takes time for any change in teaching to have an impact on student achievement.
- Many other factors can influence how students perform, and some of these are outside the influence of the school.
- Research in education does not always have the techniques to isolate the impact of one group of influences in the complexity of influences affecting student achievement.
- Teachers implement First Steps at different rates and in different ways.
- Some teachers who have not been trained with First Steps strategies use similarly effective strategies.

These factors make the results of this study all the more important. They suggest that notwithstanding all the possibilities, First Steps seems to have resulted in improvements to student achievement in literacy in this short space of time during which First Steps has been in existence.

As noted earlier, the tests used in this project addressed a wide range of outcomes related to literacy. Examples of specific aspects of literacy addressed include:

For reading:

- *constructs meaning from texts with familiar content,*
- *makes connections between own knowledge...and the information in texts,*
- *use basic strategies for interpreting written and visual text, and*
- *maintain continuity in understanding when meaning is disrupted.*

For writing:

- *writes brief imaginative and factual texts which include some related ideas about familiar topics,*
- *uses basic linguistic structures and features of writtenlanguage so that writing can be readily interpreted by others, and*
- *uses writing to develop familiar ideas, events and information.*

The implications of these results are that First Steps has outperformed conventional instruction in assisting students to master the aspects of literacy measured by the reading and writing tests.

One is led to conclude that it is reasonable to expect that the level of improvement will increase as First Steps strategies become further embedded into normal classroom practice.

Appendix 1 The Teacher survey instrument

FIRST STEPS EVALUATION QUESTIONNAIRE

School:_____

1. Location
   - Metropolitan..... 1
   - Country..... 2
   - Remote country..... 3

2. Type of school
   - Primary..... 1
   - District High..... 2
   - Other (please state)..... 3

3. Category of school
   - Level 3 - less than 100 students..... 1
   - Level 4 - 101 - 300 students..... 2
   - Level 5 - 301 - 700 students..... 3
   - Level 6 - more than 700..... 4

4. Please show how long you have been teaching.
   - My first year..... 1
   - 1 to 3 years..... 2
   - 4 to 6 years..... 3
   - 7 to 10 years..... 4
   - more than 10 years..... 5

6. Please show the year in which your school began with First Steps.
   - 1989 - 1990..... 1
   - 1991 - 1992..... 2
   - 1993 - 1994..... 3

7. Please tick the box if appropriate for your school.
   - PSP school..... 1
   - ELAN school..... 2
   - PCAP school..... 3
   - Remote Community school..... 4

8. Please tick the year level you presently teach.
   - Year 3..... 1
   - Year 7..... 2

9. Please show the parts of the school which are working with First Steps.
   - K only..... 1
   - K to 3 only..... 2
   - K to 7..... 3
   - Year 4 and 5 only..... 4
   - Year 6 and 7 only..... 5
   - Other (please state)..... 6

10. Please tick those areas in which you have received First Steps professional development.

Spelling	
Writing	
Reading	

11. Please tick how long your students have had exposure to First Steps.

Up to six months	1	
More than six months and up to one year	2	
More than one year and up to two years	3	
More than two years and up to three years	4	
More than three years	5	

12. Would you describe the exposure your students have had to First Steps as continuous or interrupted. (eg. where a previous teacher may not have adopted First Steps for whatever reason.)

Continuous	1	
Interrupted	2	

13. What impact has First Steps had on the following aspects of your teaching? Please use the following key when responding to parts A to G.

No change	1
Very little change	2
Moderate change	3
A considerable degree of change	4
Major changes	5

A. School development planning	
B. Language policies	
C. Language programs	
D. Teaching methods	
E. Monitoring using the continua	
F. Reporting to parents	
G. Working with students "at risk"	

14. Please rate the extent to which the following components of the First Steps literacy program have been implemented with the children with whom you work.

Please use the following key when responding to parts A, B and C.

We have not had this component yet.....0
Implementation has not started yet.....1
Just beginning to implement.....2
Implementation is well under way.....3
It is an established part of my activities.....4

A. Spelling	
B. Writing	
C. Reading	

15. Please rate the impact of the First Steps literacy program on student attitude to and confidence in each aspect of language.

Please use the following key when responding to parts A, B, C and D.

Have not yet covered this component..... 0
Much less positive..... 1
Less positive..... 2
No noticeable effect..... 3
More positive..... 4
Much more positive..... 5

A. Student's total language development	
B. Spelling	
C. Writing	
D. Reading	

16. In the tables below and on the next page, are a series of statements regarding principles of learning in writing, spelling and reading. Please tick a number to show the extent to which the statement represents your classroom practice.

Writing and Spelling	Classroom Practice				
	Used fully		Mod use		Not used
There are links between writing, 'Have a Go' pads and journals	5	4	3	2	1
Children learn to spell by writing	5	4	3	2	1
A variety of strategies are used to teach spelling	5	4	3	2	1
Children proof read and edit their own writing	5	4	3	2	1
As a teacher you use the problem solving approach to teach spelling writing and skills eg. grammar punctuation.	5	4	3	2	1
Spelling comes from a wide variety of sources	5	4	3	2	1
Children have individual spelling lists	5	4	3	2	1

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Reading	Classroom Practice				
	Used fully		Mod use		Not used
Children read for meaning and do not have to know every word	5	4	3	2	1
Children share reading activities and what they have been doing	5	4	3	2	1
Children at risk are catered for in a variety of contexts	5	4	3	2	1
Discussion often takes place in reading	5	4	3	2	1
The reading development needs of every child are addressed daily in some way	5	4	3	2	1
It is important to model and teach reading strategies	5	4	3	2	1

17. On the scale below, please tick the number to indicate the extent to which you believe you use the First Steps strategies overall.

WRITING

Extent of Use of First Steps Strategies in Writing				
Used fully		Used moderately		Not used
5	4	3	2	1

SPELLING

Extent of Use of First Steps Strategies in Spelling				
Used fully		Used moderately		Not used
5	4	3	2	1

READING

Extent of Use of First Steps Strategies in Reading				
Used fully		Used moderately		Not used
5	4	3	2	1

Thank you for your assistance.

Appendix 2 The Student Background Information Sheet

STUDENT INFORMATION

Student's Code Number:

1. Are you a boy or a girl

- ☐ boy
- ☐ girl

2. How old are you?

☐ years

3. Are you an Aboriginal or Torres Strait Islander person?

- ☐ yes
- ☐ no

4. Does anyone use a language other than English in your home?

- ☐ yes
- ☐ no

5. How often do YOU speak English at home?

- ☐ Always
- ☐ Usually
- ☐ Sometimes, but not usually
- ☐ Never, or almost never

6. How many years have you lived in Australia?

- ☐ 2 years or less
- ☐ 3 or 4 years
- ☐ 5 years or more

Appendix 3 Data Analysis Report

Professor D Andrich
Murdoch University

Statistical Analysis on First Steps Data

Aim

To identify the effect of First-Steps program on the achievements in Year 3 and Year 7 classes. As the pre-programme data is not available, the analysis is based only on the information in the data collected after the programme was introduced.

Method

The method of analysis in identifying the contribution from the different independent variables (SES, Gender, Degree of Use of First Steps) on performance of the students was standard stepwise multiple regression. The specific approach taken was according to the following steps:

(i) to identify the independent variable that contributed most to performance independently of the contribution of any other variable;

(ii) to identify the next variable that contributed most to performance over and above the contribution of the first variable;

(iii) to identify the next variable that contributed most to performance over and above the contribution of the first two variables, and so on.

The reason this stepwise procedure is taken is that the independent variables correlate with each other, and therefore some part of the second variable is already accounted for by the first variable, and likewise, some part of the third variable is already accounted for by the first two variables. In the Year 3 data, the effect of First Steps was third after SES and Gender, while in the Year 7 data it was not in the first three variables.

Result

Part 1.1 Correlation Analysis on Year 3 Data

Variable Labels:

K - Achievement
BI - Loading of FS
A - SES
C - Gender
E - Abor
F - nonE
G - HomeLang
H - Years in Aus

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	889	86.11249	13.17445	76554
A	889	4.68279	3.24047	4163
C	889	1.48144	0.49994	1317
E	889	0.02587	0.15884	23.00000
F	889	0.17998	0.40158	160.00000
G	889	3.33858	1.13060	2968
H	889	2.90551	0.35206	2583
K	889	27.53431	10.04916	24478

Variable	Minimum	Maximum
BI	61.00000	108.00000
A	1.00000	10.00000
C	1.00000	2.00000
E	0	1.00000
F	0	4.00000
G	1.00000	4.00000
H	1.00000	3.00000
K	0	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 889

	BI	A	C	E
BI	1.00000 0.0	-0.35667 0.0001	-0.00481 0.8861	0.01637 0.6260
A	-0.35667 0.0001	1.00000 0.0	-0.00989 0.7683	0.07941 0.0179
C	-0.00481 0.8861	-0.00989 0.7683	1.00000 0.0	-0.00104 0.9754
E	0.01637 0.6260	0.07941 0.0179	-0.00104 0.9754	1.00000 0.0
F	-0.10834 0.0012	-0.03742 0.2650	-0.01139 0.7345	0.10346 0.0020
G	0.18305 0.0001	-0.16430 0.0001	0.02010 0.5496	0.00133 0.9683
H	-0.01252 0.7094	0.01713 0.6100	-0.00358 0.9152	-0.03679 0.2732
K	0.17383 0.0001	-0.22303 0.0001	-0.14899 0.0001	-0.08204 0.0144

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 889
(continued)

	F	G	H	K
BI	-0.10834 0.0012	0.18305 0.0001	-0.01252 0.7094	0.17383 0.0001
A	-0.03742 0.2650	-0.16430 0.0001	0.01713 0.6100	-0.22303 0.0001
C	-0.01139 0.7345	0.02010 0.5496	-0.00358 0.9152	-0.14899 0.0001
E	0.10346 0.0020	0.00133 0.9683	-0.03679 0.2732	-0.08204 0.0144
F	1.00000 0.0	-0.17157 0.0001	-0.24598 0.0001	-0.01521 0.6507
G	-0.17157 0.0001	1.00000 0.0	0.15120 0.0001	0.06771 0.0435
H	-0.24598 0.0001	0.15120 0.0001	1.00000 0.0	0.03338 0.3201
K	-0.01521 0.6507	0.06771 0.0435	0.03338 0.3201	1.00000 0.0

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Year 3: The Correlation Coefficients between loading of FS (Label BI) and the Achievement (Label K) (Summary)

- **Overall**: 0.17383
- **by SES** (Label A)
  - 1 0.1908
  - 2 -0.3808
  - 3 n/a
  - 4 0.3071
  - 6 0.1400
  - 7 0.0574
  - 8 0.2100
  - 9 n/a
  - 10 -0.3066
- **by Gender** (Label C)
  - 1 0.1626
  - 2 0.1878
- **by Abor** (Label E)
  - 0 0.1785
  - 1 0.0961
- **by nonE** (Label F)
  - 0 0.2111
  - 1 -0.0559
- **by HomeLang** (Label G)
  - 1 0.1850
  - 2 0.0503
  - 3 0.1522
  - 4 0.1749
- **by Years in Aus** (Label H)
  - 1 -0.0925
  - 2 0.0633
  - 3 0.1889

Year 3: The Correlation Coefficients between loading of FS (Label BI) and the Achievement (Label K) (Details)

---------- A=1 ----------

CORRELATION ANALYSIS

1 'WITH' Variables: BI
1 'VAR' Variables: K

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	260	91.01154	12.66085	23663
K	260	31.00385	8.39723	8061

Variable	Minimum	Maximum
BI	69.00000	108.00000
K	9.00000	49.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 260

	K
BI	0.19084 0.0020

---------- A=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	93	92.94624	7.98690	8644
K	93	28.02151	9.75792	2606

Variable	Minimum	Maximum
BI	84.00000	100.00000
K	5.00000	47.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 93

	K
BI	-0.38185 0.0002

---------- A=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	53	67.00000	0	3551
K	53	22.83019	5.09047	1210

Variable	Minimum	Maximum
BI	67.00000	67.00000
K	14.00000	34.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 53

	K
BI	.

---------- A=4 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	47	87.53191	3.18182	4114
K	47	28.82979	10.41596	1355

Variable	Minimum	Maximum
BI	86.00000	94.00000
K	9.00000	47.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 47

	K
BI	0.30715 0.0357

---------- A=6 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	108	96.48148	6.88691	10420
K	108	26.79630	11.63764	2894

Variable	Minimum	Maximum
BI	91.00000	107.00000
K	0	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 108

	K
BI	0.14000 0.1484

---------- A=7 ----------

CORRELATION ANALYSIS

1 'WITH' Variables: BI
1 'VAR' Variables: K

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	108	85.76852	5.24468	9263
K	108	27.72222	9.30665	2994

Variable	Minimum	Maximum
BI	82.00000	93.00000
K	3.00000	47.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 108

	K
BI	0.05745 0.5548

---------- A=8 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	112	83.77679	7.15304	9383
K	112	26.17857	11.63655	2932

Variable	Minimum	Maximum
BI	78.00000	97.00000
K	2.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 112

	K
BI	0.21002 0.0262

---------- A=9 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	10	68.00000	0	680.00000
K	10	18.50000	9.68676	185.00000

Variable	Minimum	Maximum
BI	68.00000	68.00000
K	6.00000	34.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 10

	K
BI	.

---------- A=10 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	98	69.75510	14.64428	6836
K	98	22.86735	9.66302	2241

Variable	Minimum	Maximum
BI	61.00000	94.00000
K	5.00000	44.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 98

	K
BI	-0.30665 0.0021

---------- C=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	461	86.17354	13.12483	39726
K	461	28.97614	9.73773	13358

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	0	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 461

	K
BI	0.16261 0.0005

---------- C=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	428	86.04673	13.24274	36828
K	428	25.98131	10.15868	11120

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	2.00000	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 428

	K
BI	0.18788 0.0001

---------- E=0 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	866	86.07737	13.13539	74543
K	866	27.66859	9.96165	23961

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	2.00000	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 866

	K
BI	0.17859 0.0001

---------- E=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	23	87.43478	14.83186	2011
K	23	22.47826	12.12387	517.00000

Variable	Minimum	Maximum
BI	61.00000	107.00000
K	0	41.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 23

	K
BI	0.09611 0.6627

---------- F=0 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	732	86.88934	13.16329	63603
K	732	27.66393	10.19034	20250

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	0	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 732

	K
BI	0.21111 0.0001

---------- F=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	156	82.33974	12.54848	12845
K	156	26.83974	9.33153	4187

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	3.00000	46.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 156

	K
BI	-0.05590 0.4883

---------- F=4 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	1	106.00000	.	106.00000
K	1	41.00000	.	41.00000

Variable	Minimum	Maximum
BI	106.00000	106.00000
K	41.00000	41.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1

	K
BI	.

---------- G=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	140	81.91429	17.68082	11468
K	140	26.18571	9.87882	3666

Variable	Minimum	Maximum
BI	61.00000	100.00000
K	5.00000	49.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 140

	K
BI	0.18503 0.0286

---------- G=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	48	82.02083	13.91691	3937
K	48	26.20833	10.11205	1258

Variable	Minimum	Maximum
BI	61.00000	106.00000
K	3.00000	46.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 48

	K
BI	0.05031 0.7341

---------- G=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	72	82.43056	12.37993	5935
K	72	27.68056	8.76103	1993

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	11.00000	46.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 72

	K
BI	0.15218 0.2019

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---------- G=4 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	629	87.78060	11.61290	55214
K	629	27.91892	10.20653	17561

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	0	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 629

	K
BI	0.17494 0.0001

---------- H=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	17	90.82353	9.54093	1544
K	17	23.58824	12.89893	401.00000

Variable	Minimum	Maximum
BI	78.00000	106.00000
K	3.00000	43.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 17

	K
BI	-0.09255 0.7239

---------- H=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	50	83.94000	12.24813	4197
K	50	28.12000	9.32331	1406

Variable	Minimum	Maximum
BI	61.00000	106.00000
K	13.00000	46.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 50

	K
BI	0.06333 0.6622

---------- H=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	822	86.14720	13.27610	70813
K	822	27.58029	10.02252	22671

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	0	52.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 822

	K
BI	0.18896 0.0001

Part 1.2: Regression Analysis without general norms on Year 3 data

Dependent Variable: K - Achievement
Independent variables: BI - Loading of FS
A - SES
C - Gender
E - Abor
F - nonE
G - HomeLang
H - Years in Aus

Analysis 1: non selection

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	7968.26483	1138.32355	12.274	0.0001
Error	881	81706.93877	92.74340		
C Total	888	89675.20360			

Root MSE	9.63034	R-square	0.0889
Dep Mean	27.53431	Adj R-sq	0.0816
C.V.	34.97577		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	24.211279	4.01037365	6.037	0.0001
BI	1	0.082981	0.02674592	3.103	0.0020
A	1	-0.550796	0.10851669	-5.076	0.0001
C	1	-3.024307	0.64667542	-4.677	0.0001
E	1	-4.387769	2.05779062	-2.132	0.0333
F	1	0.168437	0.85129950	0.198	0.8432
G	1	0.158218	0.29900093	0.529	0.5968
H	1	0.960891	0.95522469	1.006	0.3147

Analysis 2: Stepwise Regression

Stepwise Procedure for Dependent Variable K

Step 1 Variable A Entered R-square = 0.04974260 C(p) = 33.82034464

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	4460.67733519	4460.67733519	46.43	0.0001
Error	887	85214.52626436	96.07049184		
Total	888	89675.20359955			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	30.77316087	0.57792265	272392.28049507	2835.34	0.0001
A	-0.69165025	0.10150353	4460.67733519	46.43	0.0001

Bounds on condition number: 1, 1

Step 2 Variable C Entered R-square = 0.07260533 C(p) = 13.71396591

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	6510.89814408	3255.44907204	34.68	0.0001
Error	886	83164.30545547	93.86490458		
Total	888	89675.20359955			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	35.29770325	1.12408591	92554.41224121	986.04	0.0001
A	-0.69629005	0.10033652	4520.28253894	48.16	0.0001
C	-3.03948575	0.65035639	2050.22080889	21.84	0.0001

Bounds on condition number: 1.000098, 4.000392

Step 3 Variable BI Entered R-square = 0.08252087 C(p) = 6.12646530

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	7400.07558500	2466.69186167	26.53	0.0001
Error	885	82275.12801455	92.96624634		
Total	888	89675.20359955			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	27.71761192	2.69422726	9839.39651984	105.84	0.0001
BI	0.08130519	0.02628976	889.17744091	9.56	0.0020
A	-0.57836426	0.10688778	2721.89925559	29.28	0.0001
C	-3.02161273	0.64726147	2026.01844384	21.79	0.0001

Bounds on condition number: 1.145931, 9.875864

Step 4 Variable E Entered R-square = 0.08734146 C(p) = 3.46535247

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	4	7832.36305437	1958.09076359	21.15	0.0001
Error	884	81842.84054518	92.58239881		
Total	888	89675.20359955			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	27.49794566	2.69058058	9670.23265600	104.45	0.0001
BI	0.08402869	0.02626569	947.55813973	10.23	0.0014
A	-0.55724273	0.10711382	2505.68372338	27.06	0.0001
C	-3.02136609	0.64592386	2025.68764148	21.88	0.0001
E	-4.41152330	2.04158031	432.28746937	4.67	0.0310

Bounds on condition number: 1.155554, 17.25156

All variables in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable K

Step	Variable Entered	Removed	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	A		1	0.0497	0.0497	33.8203	46.4313	0.0001
2	C		2	0.0229	0.0726	13.7140	21.8423	0.0001
3	BI		3	0.0099	0.0825	6.1265	9.5645	0.0020
4	E		4	0.0048	0.0873	3.4654	4.6692	0.0310

Part 2.1 Correlation Analysis on Year 7 Data

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	901	88.25194	13.92974	79515
A	901	4.64040	3.36906	4181
C	901	1.49612	0.50248	1348
E	901	0.03219	0.17659	29.00000
F	901	0.12986	0.33633	117.00000
G	901	3.27858	1.20880	2954
H	901	2.94007	0.28434	2649
K	901	29.81021	7.32534	26859

Variable	Minimum	Maximum
BI	61.00000	108.00000
A	1.00000	10.00000
C	0	2.00000
E	0	1.00000
F	0	1.00000
G	1.00000	4.00000
H	1.00000	3.00000
K	6.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 901

	BI	A	C	E
BI	1.00000 0.0	-0.25869 0.0001	-0.00010 0.9977	0.00528 0.8742
A	-0.25869 0.0001	1.00000 0.0	-0.00345 0.9176	0.16141 0.0001
C	-0.00010 0.9977	-0.00345 0.9176	1.00000 0.0	0.00767 0.8181
E	0.00528 0.8742	0.16141 0.0001	0.00767 0.8181	1.00000 0.0
F	-0.10968 0.0010	0.05008 0.1331	0.00628 0.8508	0.09792 0.0033
G	0.22018 0.0001	-0.30250 0.0001	-0.03206 0.3365	-0.00562 0.8663
H	-0.09100 0.0063	0.06099 0.0673	-0.00941 0.7779	-0.05005 0.1333
K	0.06562 0.0490	-0.10938 0.0010	-0.03537 0.2889	-0.03564 0.2852

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Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 901
(continued)

	F	G	H	K
BI	-0.10968 0.0010	0.22018 0.0001	-0.09100 0.0063	0.06562 0.0490
A	0.05008 0.1331	-0.30250 0.0001	0.06099 0.0673	-0.10938 0.0010
C	0.00628 0.8508	-0.03206 0.3365	-0.00941 0.7779	-0.03537 0.2889
E	0.09792 0.0033	-0.00562 0.8663	-0.05005 0.1333	-0.03564 0.2852
F	1.00000 0.0	-0.12187 0.0002	-0.20899 0.0001	-0.04771 0.1524
G	-0.12187 0.0002	1.00000 0.0	0.01954 0.5581	0.11038 0.0009
H	-0.20899 0.0001	0.01954 0.5581	1.00000 0.0	0.04681 0.1603
K	-0.04771 0.1524	0.11038 0.0009	0.04681 0.1603	1.00000 0.0

Year 7: The Correlation Coefficients between loading of
FS (Label BI) and the Achievement (Label K)
(Summary)

- **Overall**: 0.06562
- **by SES** (Label A)
  - 1 0.2426
  - 2 -0.4452
  - 3 n/a
  - 4 0.2207
  - 6 0.0648
  - 7 0.2430
  - 8 0.0841
  - 9 n/a
  - 10 -0.2642
- **by Gender** (Label C)
  - 1 0.0825
  - 2 0.0474
- **by Abor** (Label E)
  - 0 0.0808
  - 1 -0.4475
- **by nonE** (Label F)
  - 0 0.0984
  - 1 -0.1560
- **by HomeLang** (Label G)
  - 1 -0.1274
  - 2 -0.0542
  - 3 -0.2344
  - 4 0.1412
- **by Years in Aus** (Label H)
  - 1 -0.0003
  - 2 0.2036
  - 3 0.0647

Year 7: The Correlation Coefficients between loading of FS (Label BI) and the Achievement (Label K) (Details)

---------- A=1 ----------

CORRELATION ANALYSIS

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	301	93.77076	14.58826	28225
K	301	30.74419	6.82332	9254

Variable	Minimum	Maximum
BI	69.00000	108.00000
K	6.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 301

	K
BI	0.24266 0.0001

---------- A=2 ----------

CORRELATION ANALYSIS

1 'WITH' Variables: BI
1 'VAR' Variables: K

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	78	91.58974	8.04119	7144
K	78	28.53846	9.04921	2226

Simple Statistics

Variable	Minimum	Maximum
BI	84.00000	100.00000
K	7.00000	43.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 78

	K
BI	-0.44526 0.0001

---------- A=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	58	67.00000	0	3886
K	58	30.05172	5.94838	1743

Variable	Minimum	Maximum
BI	67.00000	67.00000
K	13.00000	42.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 58

	K
BI	.

---------- A=4 ----------

CORRELATION ANALYSIS

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	18	91.77778	3.68711	1652
K	18	33.05556	6.52121	595.00000

Variable	Minimum	Maximum
BI	86.00000	94.00000
K	24.00000	42.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 18

	K
BI	0.22072 0.3788

---------- A=6 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	113	96.38053	6.88207	10891
K	113	29.74336	6.96391	3361

Variable	Minimum	Maximum
BI	91.00000	107.00000
K	7.00000	42.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 113

	K
BI	0.06484 0.4951

---------- A=7 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	126	86.36508	5.40311	10882
K	126	30.80159	8.03594	3881

Variable	Minimum	Maximum
BI	82.00000	93.00000
K	8.00000	43.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 126

	K
BI	0.24305 0.0061

---------- A=8 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	70	84.12857	7.34240	5889
K	70	29.14286	5.81175	2040

Variable	Minimum	Maximum
BI	80.00000	97.00000
K	14.00000	45.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 70

	K
BI	0.08413 0.4887

---------- A=9 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	12	68.00000	0	816.00000
K	12	29.25000	9.08670	351.00000

Variable	Minimum	Maximum
BI	68.00000	68.00000
K	11.00000	42.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 12

	K
BI	.

---------- A=10 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	125	81.04000	17.02010	10130
K	125	27.26400	7.50714	3408

Variable	Minimum	Maximum
BI	61.00000	97.00000
K	9.00000	44.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 125

	K
BI	-0.26423 0.0029

---------- C=0 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	1	69.00000	.	69.00000
K	1	28.00000	.	28.00000

Simple Statistics

Variable	Minimum	Maximum
BI	69.00000	69.00000
K	28.00000	28.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 1

	K
BI	.

---------- C=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	452	88.33850	14.35079	39929
K	452	30.07743	7.17786	13595

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	6.00000	45.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 452

	K
BI	0.08253 0.0796

---------- C=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	448	88.20759	13.49270	39517
K	448	29.54464	7.47720	13236

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	7.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 448

	K
BI	0.04748 0.3160

---------- E=0 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	872	88.23853	14.00321	76944
K	872	29.85780	7.30462	26036

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	6.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 872

	K
BI	0.08088 0.0169

---------- E=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	29	88.65517	11.70249	2571
K	29	28.37931	7.92561	823.00000

Variable	Minimum	Maximum
BI	61.00000	107.00000
K	9.00000	42.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 29

	K
BI	-0.44752 0.0149

---------- F=0 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	784	88.84184	13.67271	69652
K	784	29.94515	7.25724	23477

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	6.00000	45.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 784

	K
BI	0.09845 0.0058

---------- F=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	117	84.29915	15.01624	9863
K	117	28.90598	7.73815	3382

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	9.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 117

	K
BI	-0.15607 0.0929

---------- G=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	179	82.67598	14.31296	14799
K	179	28.48603	8.35273	5099

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	7.00000	44.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 179

	K
BI	-0.12748 0.0890

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---------- G=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	30	83.66667	17.28331	2510
K	30	28.50000	7.90351	855.00000

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	14.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 30

	K
BI	-0.05427 0.7758

---------- G=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	53	86.98113	13.86957	4610
K	53	28.11321	8.51393	1490

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	9.00000	45.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 53

	K
BI	-0.23449 0.0910

---------- G=4 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	639	90.13459	13.18760	57596
K	639	30.38341	6.80760	19415

Variable	Minimum	Maximum
BI	67.00000	108.00000
K	6.00000	45.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 639

	K
BI	0.14121 0.0003

---------- H=1 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	11	95.27273	9.97087	1048
K	11	25.09091	7.96812	276.00000

Variable	Minimum	Maximum
BI	84.00000	108.00000
K	15.00000	40.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 11

	K
BI	-0.00034 0.9992

---------- H=2 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	32	93.56250	12.88645	2994
K	32	30.31250	8.49834	970.00000

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	11.00000	44.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 32

	K
BI	0.20365 0.2636

---------- H=3 ----------

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BI	858	87.96387	13.95843	75473
K	858	29.85198	7.25966	25613

Variable	Minimum	Maximum
BI	61.00000	108.00000
K	6.00000	50.00000

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0 / N = 858

	K
BI	0.06477 0.0579

Part 2.1 Regression Analysis without general norms on Year 7 data

Dependent Variable: K - Achievement
Independent variables: BI - Loading of FS
A - SES
C - Gender
E - Abor
F - nonE
G - HomeLang
H - Years in Aus

Analysis 1: non selection

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Prob>F
Model	7	1150.76254	164.39465	3.114	0.0030
Error	893	47143.78352	52.79259		
C Total	900	48294.54606			

Root MSE	7.26585	R-square	0.0238
Dep Mean	29.81021	Adj R-sq	0.0162
C.V.	24.37370		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	T for H0: Parameter=0	Prob > |T|
INTERCEP	1	24.817636	3.38080292	7.341	0.0001
BI	1	0.016426	0.01840636	0.892	0.3724
A	1	-0.168540	0.07841583	-2.149	0.0319
C	1	-0.473765	0.48233366	-0.982	0.3263
E	1	-0.761329	1.40071724	-0.544	0.5869
F	1	-0.418708	0.74929567	-0.559	0.5764
G	1	0.458335	0.21429307	2.139	0.0327
H	1	1.227883	0.87906835	1.397	0.1628

Analysis 2: Stepwise Regression

Stepwise Procedure for Dependent Variable K

Step 1 Variable G Entered R-square = 0.01218310 C(p) = 6.65272805

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	1	588.37742655	588.37742655	11.09	0.0009
Error	899	47706.16863339	53.06581605		
Total	900	48294.54605993			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	27.61721316	0.70188482	82156.67491207	1548.20	0.0001
G	0.66888657	0.20087778	588.37742655	11.09	0.0009

Bounds on condition number: 1, 1

Step 2 Variable A Entered R-square = 0.01853932 C(p) = 2.83807442

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	2	895.34805612	447.67402806	8.48	0.0002
Error	898	47399.19800381	52.78307127		
Total	900	48294.54605993			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	28.96387174	0.89545730	55222.76229394	1046.22	0.0001
A	-0.18186863	0.07541482	306.97062957	5.82	0.0161
G	0.51555324	0.21018938	317.55588780	6.02	0.0144

Bounds on condition number: 1.100723, 4.402891

Step 3 Variable H Entered R-square = 0.02107789 C(p) = 2.51579813

	DF	Sum of Squares	Mean Square	F	Prob>F
Regression	3	1017.94703743	339.31567914	6.44	0.0003
Error	897	47276.59902250	52.70523860		
Total	900	48294.54605993			

Variable	Parameter Estimate	Standard Error	Type II Sum of Squares	F	Prob>F
INTERCEP	25.21689388	2.61464772	4902.42095222	93.02	0.0001
A	-0.18995699	0.07554557	333.23172026	6.32	0.0121
G	0.50275308	0.21020196	301.50167321	5.72	0.0170
H	1.30149347	0.85334659	122.59898131	2.33	0.1276

Bounds on condition number: 1.106174, 9.641971

All variables in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

Summary of Stepwise Procedure for Dependent Variable K

Step	Variable Entered	Variable Removed	Number In	Partial R**2	Model R**2	C(p)	F	Prob>F
1	G		1	0.0122	0.0122	6.6527	11.0877	0.0009
2	A		2	0.0064	0.0185	2.8381	5.8157	0.0161
3	H		3	0.0025	0.0211	2.5158	2.3261	0.1276

Conclusion

1. Overall, the effect of First-Steps programme is positive;
2. The effect of First-Steps programme on Year 3 is different form that on Year 7;
3. In Year 3 data, the effect of First-Steps programme (Variable labelled BI) is significant, the third significant factor after SES and Gender; In Year 7 data, however, the effect of First-Steps programme is not significant at the 0.1500 significance level so that it is not included in the final model of the stepwise regression.
4. The significant factors on the achievements of Year 3 data and Year 7 data are different. Though SES is a very significant factor on both, other significant factors on Year 3 data are Gender and Aboriginality while those on Year 7 data are Home Language and Number of Years in Australia.